CLAIMS

1. An energy generating system comprising:

at least one front stage reaction means which receives a raw material to generate a reaction product; and

a rear stage reaction means which receives said reaction product to generate energy, wherein

said front stage reaction means produces said reaction product by receiving mechanical power from the outside, or outputs mechanical power generated by chemical reaction in said front stage reaction means to the outside.

2. An energy generating system according to claim 1, wherein

at least one of said front stage reaction means receives said raw material and said mechanical power, and produces a reaction product having a chemical energy higher than a chemical energy of said raw material.

3. An energy generating system according to claim 1, wherein

at least one of said front stage reaction means produces a reaction product different from said raw material in combustive property.

4. An energy generating system according to claim 1,

wherein

said front stage reaction means comprises a reaction composition control means for control the reaction product or composition rates of the reaction product, wherein

a root pipe connected to a reaction product output port of said front stage reaction means is branched into at least two conveying pipes,

at least one of said conveying pipes being connected to said rear stage reaction means,

said energy generating system comprising a use pipe selecting means,

said use pipe selecting means switching said conveying pipe to be used using information from said reaction composition control means.

5. An energy generating system according to claim 1, wherein

said front stage reaction means comprises an energy converting means for converting electric energy to mechanical power or mechanical power to electric energy.

6. An energy generating system according to claim 1, wherein

said front stage reaction means and said rear reaction means are connected to each other through a heat

transfer means.

7. An energy generating system according to claim 1, wherein

said front stage reaction means is a heat engine, and

said rear stage reaction means is a fuel battery.

8. An energy generating system according to claim 7, wherein

said heat engine performs said front reaction in a steam atmosphere using water supplied from a water supply means.

9. An energy generating system according to claim 7, wherein

said heat engine is an internal combustion engine,

said internal combustion engine comprising a fuel injection valve,

a reaction composition control means controlling an amount of fuel injected from said fuel injection valve.

10. An energy generating system according to claim 7, wherein

said heat engine is an internal combustion engine,

said internal combustion engine comprising a variable

drive valve,

a reaction composition control means controlling a compression ratio of said internal combustion engine by changing opening-and-closing timings of said variable drive valve.

11. An energy generating system according to claim 7, wherein

said heat engine has a time period to generate mechanical power, and

said heat engine comprises a means for supplying compressed air to said fuel battery using said mechanical power.

12. An energy generating system according to claim 7, wherein

said heat engine has a time period to perform at least one of reforming reaction for generating fuel to be supplied to said fuel battery and mechanical power generating reaction, and

said energy generating system comprises a low temperature heat transfer means for heating a raw material to be injected into said heat engine using generated heat accompanied by electric generation of said fuel battery, or a high temperature heat transfer means for heating the raw

material to be injected into said heat engine using exhaust heat of said heat engine itself.

13. An energy generating system according to claim 7, which comprises:

a heating means for heating a raw material to be injected into said heat engine; and

a fuel selecting means between said heat engine and said fuel battery, wherein

said fuel selecting means selecting reaction fuel to be supplied to said fuel battery and heating fuel to be supplied to said heating means,

said heating means using said heating fuel as fuel of said heating means.

14. An energy generating system according to claim 7, which comprises:

a heating means for heating a raw material to be injected into said heat engine; and

a fuel collecting means in a reaction product output port of said fuel battery, wherein

said heating means uses un-reacted fuel in said fuel battery collected by said fuel collecting means as fuel of said heating means.

15. An energy generating system according to any one of claim 12 and claim 13, wherein

said internal combustion engine comprises an intake pipe for transporting a raw material, and

the following relation is satisfied,

$L1 < L2 < L3$

where L1 is a distance of said intake pipe of said internal combustion engine along said heating means, L2 is a distance of said intake pipe of said internal combustion engine along said high temperature heat transfer means, and L3 is a distance of said intake pipe of said internal combustion engine along said low temperature heat transfer means.

16. An energy generating system according to any one of claim 12 and claim 13, wherein

said heating means controls an amount of the supplied heat in order to heat the injected raw material to a target temperature indicated by a temperature control means by changing a supply ratio of un-reacted fuel components from said fuel battery and exhaust substances from said fuel selecting means.

17. An energy generating system according to claim 7, wherein

said heat engine is an internal combustion engine,

said energy generating system transferring heat generated by said fuel battery to said internal combustion engine, or heat generated by said internal combustion engine to said fuel battery,

said heating means heating the raw material to be injected to said internal combustion engine,

said energy generating system comprising a temperature control means for said internal combustion engine and said fuel battery,

said temperature control means controlling amounts of heat of said heat transfer means and said heating means and an amount of supplied fuel so that temperature in a reaction chamber of said internal combustion engine just before ignition may become a temperature above a self-ignition temperature of the raw material under an atmosphere in said reaction chamber,

said temperature control means controlling amounts of heat of said heat transfer means and said heating means and an amount of supplied fuel so that temperature of fuel to be supplied to said fuel battery may become an operating temperature of said fuel battery.

18. An energy generating system according to claim 17, wherein

said temperature control means comprises an internal combustion engine control means for controlling said internal combustion engine,

said internal combustion engine control means receiving intake raw material temperature information transmitted from said temperature control means,

said internal combustion engine control means controlling an amount of produced fuel to be supplied to said fuel battery using any items of information on an equivalent ratio, a compression ratio, a compression history, a cooling water temperature, a lubricant oil temperature, a lubricant oil pressure, an intake gas flow rate and a compression speed.

19. A vehicle mounting the energy generating system according to claim 7, which comprises

a motor for converting electric power obtained from said fuel battery to mechanical power, wherein

an output shaft of said motor and a mechanical power output shaft of said heat engine are connected to a wheel shaft through a mechanical transmission element.

20. A vehicle mounting the energy generating system according to claim 7, which comprises

an electricity storing means for storing direct

current electric power obtained from said fuel battery, wherein

a mechanical power output shaft of said heat engine is connected to a electric generator,

alternating current electric power obtained from said electric generator being converted to direct current electric power by an alternating current electric power converting means to be stored in said electricity storing means,

said vehicle comprising a motor for driving said vehicle using the electricity stored in said electricity storing means,

an output shaft of said motor being connected to a wheel shaft through a mechanical transmission element.

21. A vehicle according to any one of claim 19 and claim 20, which comprises

an energy control means which receives a command signal of a driver and vehicle information and an internal state of said fuel battery as inputs, and controls a reaction composition control means and said electric generator and said motor based on said inputs.